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ABSTRACT

A comparative study between the Sioux children in this study and the white middle-class children used in standardizing the Illinois Test of Psycho-linguistic Abilities (ITPA) may reveal areas of distinctive differences between the 2 populations in specific language use. The 59 selected Indian children were from the Fort Thompson school, were between the ages of 5-9, and in grades K-3. The findings indicated that the overall performance of this Indian group missed the norming population by only 11-12 percent. There was evidence that many Indian students are top performers in vocabulary and associative word meanings. It appeared the ITPA can be a valid diagnostic instrument for Sioux Indian students, if it is understood that the scores may be skewed slightly toward the low end of achievement. Three major recommendations are (1) further studies using the entire ITPA with Indian students are warranted and necessary for more accurate comparisons with the norming population; (2) the ITPA should be used for diagnosis of psycholinguistic abilities; and (3) the ITPA could be best used for determining individual strengths and weaknesses within a battery of tests. (FF)

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A COMPARATIVE STUDY OF A SELECTED INDIAN STUDENT POPULATION WITH THE NORMING POPULATION ON TWO I.T.P.A. SUBTESTS

A Project Paper Presented to
Dr. John Moss of the Graduate Faculty
Northern State College
Aberdeen, South Dakota

In Partial Fulfillment
of the Requirements for the Degree
Master of Science in Education

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by
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CHAPTER I

INTRODUCTION

The American Indian has been studied and researched for many years by sociologists, anthropologists and educators. Cultural studies of the aboriginal Americans have not significantly helped the intruding dominant society to effectively understand this subgroup of present day United States population. Why, then do we perform further studies as reflected in this paper?

A current approach being used by educators to provide insight into problems of educating children is to assess the psycholinguistic abilities of student populations. To include Indian children in the benefits of modern education, it is necessary to further study them in comparison with other children of the total population.

THE PROBLEM

Statement of the Problem

It was the purpose of this study to make a comparison of a group of elementary grade school Indian children with the norming population on two subtests of the Illinois Test of Psycholinguistic Abilities. A knowledge of the instrument of evaluation is considered prerequisite

background to an understanding of the comparison obtained in pursuing this problem.

Importance of the study

A comparative study between the Sioux Indian children used in this study and the white middle-class children used in standardizing the Illinois Test of Psycholinguistic Abilities (ITPA) may reveal areas of distinctive difference between the two populations in specific use of language. This might prove insightful in the solving of problems educators face in teaching Indian children in the regular classroom of schools of the dominant society.

The authors of the ITPA have stated that there exists a need for further research to study the validity of the test and scores. This paper presents the background of the ITPA so that the results found in this comparison may reflect upon the validity of the instrument when used with the total population.

This study has used only two subtests of the ITPA merely to give an indication whether further study of Indian children with this diagnostic tool could be valid and profitable. Certainly the complete battery of subtests would give a better comparison, but these two subtests were chosen as typical and indicative of a total test result.

METHODS AND PROCEDURES USED

The basis of the study was the administering of two

subtests of the Experimental Edition of the ITPA. Since language usage was the important factor to be compared, the Auditory Decoding and the Auditory Association subtests were used in this study.

These tests require knowledge of the meaning of words (especially nouns and verbs) and also the relationship of analogy between words. It is assumed that differences of abilities in language usage is best illustrated in the knowledge of vocabulary and the ability to relate words to one another.

A visit to the Bureau of Indian Affairs elementary school at Fort Thompson, South Dakota provided the opportunity to examine fifty-nine students in grades kindergarten through three. Children selected were between the ages of five to nine. The students were tested individually following the procedure described in the Examiners' Manual for the ITPA.

The child's chronological age (CA) was recorded to the nearest month as of the day of testing. The raw scores on the tests were converted to the Psycho-Linguistic Age (PLA) for each child. A comparison of the child's CA with his PLA was written as a ratio $\frac{PLA}{CA}$, giving a whole number for favorable correlation to the standard norms and decimal fraction for unfavorable correlation. Standard scores for the norming population were also used as a basis of comparison as to how well the Indian students performed. Specifically, these scores are shown to reveal strengths and

weaknesses of the Indian students and range of performance compared with the standard norms.

DEFINITION OF TERMS

Selected Indian Student Population

The children of American Indian (predominantly Sioux) descent, between the ages of five and nine years attending school at Fort Thompson Day School, Fort Thompson, South Dakota were chosen for study.

Norming Population

For the ITPA test, (Experimental Edition) the standard norms were established by the testing of 700 children between the ages of 2-0 and 9-0, ranging in IQ from 80-120, and speaking English as the mother tongue.

ITPA

The Illinois Test of Psycholinguistic Abilities is a diagnostic test devised by Samuel A. Kirk and James J. McCarthy. The Experimental Edition was first published in 1961 and since 1965 has been subjected to further revision. The Revised Edition appeared in 1969. The Experimental Edition was used in this study for the sake of a basis of comparison from the literature surrounding the first edition and also because of a lack of validity reports and standardization criteria for the Revised Edition.

Subtests

The ITPA is a battery of tests, each of which is termed a subtest. There are nine subtests in the Experimental Edition and ten discrete tests with two supplementary tests making a total of twelve subtests in the Revised Edition.

DELIMITATION OF THE STUDY

This study was limited to the results obtained by testing fifty-nine Indian students, ages five to nine in kindergarten through third grade of the Fort Thompson Day School, Fort Thompson, South Dakota. The interpretation of the results is limited to giving an indication of the validity of using the ITPA among Indian children as an approach to bettering the educational success of Indian pupils.

CHAPTER II

REVIEW OF THE LITERATURE

Emphasis upon acquisition and use of language has usually followed the pattern of normative surveys of developmental stages.[1] This emphasis has produced a barrage of testing and tests which yield classifications of subjects to certain groups, types, or categories.[2] Global tests that measure mental age or IQ are typical of this approach.

Recently attention has been given to the need for diagnostic testing. This type of testing is for the purpose of detecting specific abilities and disabilities in children that would lead to prescriptive remediation when needed.[3]

The ITPA has been designed to be a diagnostic instrument which would identify and differentiate the various aspects of cognitive ability. It has been based

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[1] J.J. McCarthy and S.A. Kirk, Illinois Test of Psycholinguistic Abilities, Experimental Edition, Examiner's Manual (Urbana: University of Illinois Press, 1961), p. 1.

[2] S.A. Kirk, J.J. McCarthy, "The Illinois Test of Psycholinguistic Abilities-An Approach to Differential Diagnosis," American Journal of Mental Deficiency, 66:399, November, 1961.

[3] S.A. Kirk, J.J. McCarthy and Winfred D. Kirk, Illinois Test of Psycholinguistic Abilities, Revised Edition, Examiner's Manual (Urbana: University of Illinois Press, 1968), p. 5.

upon Hull's theory of learning as demonstrated by Charles Osgood's model for communication. An examination of the ITPA for its construction, standardization, validity and critical evaluation was pursued to give a background to the study described in this paper.

CONSTRUCTION OF THE ITPA

The theoretical structure of the test and the place each subtest occupies is well illustrated and defined in the Examiner's Manual for each ed tion. Only the two subtests used in this study need to be examined at this time.

The Auditory Decoding Test is designed to assess the child's understanding of the spoken word. It is really a controlled vocabulary test answered by a simple "yes" or "no", or even a nod or gesture.[4]

It was developed by using some of the early word lists from the Peabody Picture Vocabulary Tests. Norms and verbs were selected to fit half-year interval changes in difficulty from the age 2-0 to 9-0. Following a simple syntax form of "Do (noun) (verb)?" The questions demand a simple affirmative or negative reply.[5]

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[4]McCarthy and Kirk, ITPA Examiner's Manual Experimental Edition, p. 55.

[5]J.J. McCarthy and S.A. Kirk, The Construction, Standardization and Statistical Characteristics of the Illinois Test of Psycholinguistic Abilities (Urbana: University Press, 1961), p. 7.

The Auditory-Vocal Association Test is supposed to test the child's ability to relate verbal symbols in a meaningful way by use of analogies.[6]

The authors were aware that auditory decoding and auditory-vocal association abilities are inter-related. They, therefore, attempted to construct the items of the Auditory-Vocal Association Test so the decoding and encoding requirements were at least two years below the level of analogy.[7] With this design, it was assumed failure on the test indicated an inability to make the analogy not an ability to decode or encode.[8] The authors were not sure to what degree they accomplished their desired goal.

STANDARDIZATION OF THE ITPA

Of special concern to this study was the procedure of standardization used for the ITPA. As a basis of comparison it is interesting to know what factors were included or excluded in the original application of the test.[9]

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[6]McCarthy and Kirk, ITPA Examiner's Manual, Experimental Edition, p. 39.

[7]McCarthy and Kirk, The Construction, Standardization and Statistical Characteristics of the ITPA, p. 8.

[8]J.J. McCarthy and J.L. Olson, Validity Studies on the Illinois Test of Psycholinguistic Abilities (Urbana: University of Illinois Press, 1964), p. 31.

There were 700 children included in the final sample, ranging in intelligence quotients from 80-120. They were screened for sensory defects. No attempt was made to control the nationality of the subjects, except that no Negroes and no children from homes where a language other than English was regularly spoken were included. Negroes were excluded because of educational and/or mental retardation possibilities.

There was also a differentiation of social class noted. The use of this three-fold stratification is discussed later in validity studies. The distinction of urban and rural was not significant in the sample population used for standardization.

VALIDITY OF THE ITPA

There are various considerations to be given to the validity of a test. Does the instrument test what it was constructed to test? For what decision is this test valid? What effect might the passing of time (actually the experiences lived during the interim of test and retest) have upon the results obtained? Is the test comprehensive in its coverage of stated abilities?

Construct Validity

As an example of construct validity, questions were raised by the authors about the Auditory Decoding Subtest. It is assumed that this subtest assesses the ability to

understand auditory linguistic symbols. This could be demonstrated by a vocabulary test which is the design of this subtest except it is given as a series of questions involving nouns and verbs posed in the formula "Do (noun) (verb)?" It may be found that this subtest correlates best with a general information test than a vocabulary test, thus proving invalid the construction of the test as assessing a linguistic ability to understand verbal symbols.[10]

Several factors affecting the test scores have emerged from studies demonstrating validity of the test. These gross factors are the effects of social class, mental age, number of siblings, positions among siblings and sex. First born and only children tend to score higher on the ITPA, other things being equal; the fewer the children in a family, the higher each will tend to score with other things being equal.[11]

Time, though a variable, does not seem to have a great effect on ITPA scores. Test-retest stability correlations are fairly high for different types of handicapped children and over varying periods of time.[12]

Some evidence[13] seems to indicate that though there

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[10]Ibid., p. 39

[11]McCarthy and Olson, Validity Studies, p. 38.

[12]Ibid., p. 65.

[13]McCarthy and Kirk, The Construction, Standardization and Statistical Characteristics of the ITPA, p. 57.

is no significant difference between the young subjects of extreme social classes, the older children of the higher social class did significantly better than their counterparts in the low social class. Mental age also has an effect upon the scores especially in the subtests requiring auditory decoding.[14] The effects of mental age and social class are confounded,[15] though further study of the nature and degree of these effects on ITPA scores is needed.

Concurrent and Predictive Validity

The difference between concurrent validity and predictive validity is primarily a matter of timing. Criteria obtained at the time the test scores are obtained is concurrent, whereas, predictive criteria is obtained at a later time.

The Auditory Decoding Test was found to correlate poorly with the Peabody-Picture-Vocabulary Test. It did correlate with the WISC Similarities Test and the Paragraph Reading section of the Stanford Achievement Test. These significant correlations suggest "the assessment of the ability to comprehend and/or remember related word sentences."[16] This makes it appear that the subtest may be

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[14]McCarthy and Olson, Validity Studies, p. 65.

[15]McCarthy and Kirk, The Construction, Standardization and Statistical Characteristics of the ITPA, p. 57.

[16]McCarthy and Olson, Validity Studies, p. 18.

assessing more than was originally intended.

The Auditory-Vocal Association Subtest correlated well with the criterion tests. In brief, this subtest appears quite valid as a general test of intellectual and linguistic ability and perhaps an even greater emphasis on linguistic ability than previously thought.[17]

Predictive validity is measured by comparing scores of criterion tests administered with the ITPA with a second administration of the criterion tests only after a lapse of time. How well the criterion tests comparisons correlate with each other as predicted by the ITPA is the "predictive" validity for the ITPA. Both subtests under discussion in this paper appeared to have qualified validity for concurrent and predictive validity. As before mentioned, the auditory decoding appeared to assess the ability to comprehend related word sequences, whereas, the original intent was the comprehension of single words. Auditory vocal association appeared to be a more general test than intended in that it assessed a number of abilities. The positive emphasis that emerged from study and analysis was its apparent emphasis on linguistic skills. The concurrent and predictive validity for these subtests is a qualified "yes".[18]

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[17]Ibid.

[18]Ibid., p. 64.

Content Validity

No direct assessment of content validity is presented in the validity studies. It was not thought feasible because of the highly theoretical construction of the ITPA.

Each subtest is homogeneous in quality. Whatever it measures, all items in the subtest tend to be measuring the same thing. Yet the subtests together show heterogeneity. Whether they assess all the important linguistic abilities, at least correlational studies and factor analysis appear to support that all subtests appear to measure something different.

The Auditory-Decoding Subtest does have good reliability and internal consistency as evidenced by the regular increasing of scores with age. Through factor analysis, auditory decoding has emerged as a rather specific factor. The test does seem to include some undesirable dependence on the comprehension of related words rather than single words. Contrary to the designed intention, it seems to include some auditory-vocal association.[19]

The Auditory-Vocal Association Subtest has been described above in several instances. Its construction is based on other abilities than just analogies, and its generality of assessment exceeds its intended purpose.

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[19]Ibid., p. 30.

Diagnostic Validity

The utility of having an instrument which could isolate and identify a single ability is obvious. Determining strengths and weaknesses, normalities and abnormalities, and integrities and deficits would be the diagnostic usefulness of such a test.

Is the ITPA such an instrument for assessing psycholinguistic abilities? Teacher rankings of students measuring the same abilities tested by the ITPA had poor correlation with the test. Sorting of profile scores of various classification of handicapping conditions by "experts" showed better correlation than expected by mere chance.[20] No conclusions are stated regarding the diagnostic validity of the ITPA from these exercises.

Though the diagnostic validity for the ITPA has not been established, the test does have usefulness because of the concurrent, predictive and construct validities mentioned above. Caution is given to the users to know the data presented in the validity study published with the test and to check their conclusions with those of the authors. Supportive diagnosis including the use of auxiliary tests to the ITPA is recommended.[21]

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[20]Ibid., p. 62.

[21]Ibid., p. 67.

CRITICISM OF THE ITPA

> The Illinois Test of Psycholinguistic Abilities does not make any assumptions with respect to neurological or neurophysiological correlates of behavior. Its emphasis is on assuming behavior manifestations in the psycholinguistic field, in relating the assets and deficits to a behavioral (not a neurological) model, and in extending this type of behavior diagnosis to a remedial teaching situation.[22]

Many of the studies done with the ITPA have tended to be very supportive of the test. For instance in one report by Wisland and Many the test was supported as having sufficient stability in its subtests to justify its use as a diagnostic instrument with individual children who have above average intelligence.[23]

A modifying opinion is posed by Weener, Barrett and Semmel[24] as they discuss the effects of the restricted norm group used for standardization. Since the IQ range was limited from 80-120, they suggest the ITPA does not use enough easy items for young disadvantaged children or enough difficult items to discriminate among older gifted children.

Those same authors reviewed most of the considerations

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[22]Kirk and McCarthy, The article from American Journal of Mental Deficiency, pp. 411-412.

[23]Milton V. Wisland and Wesley Many, "A Study of the Stability of the Illinois Test of Psycholinguistic Abilities," Educational and Psychological Measurement, 27:369-370, 1967.

[24]Weener and others, "A Critical Evaluation of the ITPA," Exceptional Children, 33:375, February 1967.

of the ITPA covered in the first part of this chapter. They questioned the restriction of the normative sample because it does not represent the population with which the test will be used. Since Negroes were excluded from the normative sample, how should one interpret scores obtained from Negro populations?

In a study reported by Weaver[25] some similarities were found between the profiles of the culturally deprived and those found among educable mentally retarded children and trainable mentally retarded children. It is also hypothesized that lower class children should do very poorly on a test standardized on what is essentially white middle class grammar.

Weener, et al. also criticize the reliability of the subtests. They point out that the subtests have high internal consistency which indicates homogeneity, but the reliability of subtests is too low for adequate prediction and diagnosis from individual profiles.[26]

The overall score as used to derive the language age for the subject seems to demonstrate reliability measures. If the test is to be used for differential diagnosis the subtest reliabilities must be increased, as presently they

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[25]Joseph Weaver and Ann Weaver, "Psycholinguistic Abilities of Culturally Deprived Negro Children," American Journal of Mental Defeciency, 72:190-197, September 1967.

[26]Weener and others, op. cit., p. 377.

can only be used for gross discriminations.[27]

The internal relationships of the test are not adequately integrated nor are the subscale performances related to other relevant behavior according to Weener, et al.[28] They do admit that a range of abilities is assessed by the ITPA and that it will become a useful instrument as evidence is provided to show how each subscale performance is related to educationally relevant behaviors.

Criticism has also been given by Frostig and Maslow.[29] They seem to want the ITPA to assess all abilities for learning whether it is used for acquisition and development of language or not. It is pointed out that the ITPA does not tap decoding (perception) through the tactile and kinesthetic sense modalities. This was considered trivial to the authors of the test.[30]

The association subtests do not reflect the integration of simultaneous imput from various sense modalities which might and do complement one another, i.e. visual and auditory. The dependence upon auditory decoding in the Auditory-Vocal Association Subtest (it presupposes the

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[27]Ibid., P. 378.

[28]Ibid., p. 379.

[29]Marianne Frostig and Phyllis Maslow, "Language Training: A Form of Ability Training," Journal of Learning Disabilities, 1:105-115, February, 1968.

[30]McCarthy and Olson, Validity Studies, p. 26.

child understands what he learns) has already been noted above which Frostig and Maslow use to illustrate their point.

They do credit the ITPA as a testing instrument which permits the setting up of programs for language training because it has helped to conceptualize the array of skills needed to be developed and it points to the methods which can be used to develop them.[31]

SUMMARY OF LITERATURE

No literature was found which dealt directly with the problem of this study. One study[32] was reviewed that discussed a culturally deprived group of students.

Several factors concerning the ITPA itself have emerged from the review of the immediate literature surrounding ITPA which might have a direct bearing on the findings of this study. It should be understood that these can be applied only as inferences, not as validated facts.

Since the standardization of norms was established with a white middle class society for its basis, many differences of test results could be expected when it would be given to other population groups. The authors have

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[31]Frostig and Maslow, op. cit., p. 114.

[32]Weaver and Weaver, loc. cit.

[33]McCarthy and Kirk, The Construction, Standardization and Statistical Characteristics of the ITPA. p. 38.

cited mental age and social class as being important variables and suggest that social and cultural differences might also influence test results.[33]

It was pointed out that the restriction of IQ for the standardization procedure (80-120) could prove detrimental to culturally disadvantaged children.[34] The critics suggested more items should be included in each subtest to compensate in favor of the disadvantaged children. This was accomplished in the Revised Edition of the ITPA. The Experimental Edition was used in this study for reasons given in chapter one; therefore the results must be interpreted with the norms for that edition and in light of this criticism.

Also ruled out of the standardization group were all students in whose home some other language than English was regularly spoken. To what extent the children tested for this study are subjected to a bilingual influence is not known to this investigator, but it remains as a factor to be considered. In a comparative study of language development where the instrument is based on the English language spoken as the native tongue, there is certain to be some differences on test performance by those who speak English as a second language with those who speak only English.

The validity of the test has been qualified by the authors and critics alike so that one can use this instrument

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[34]Weener and others, op. cit., p. 375.

for linguistic purposes. Caution has been given not to use the ITPA alone for differential diagnostic puposes but have supportive evaluation supplementary to it.

There remains a question as to whether individual subtests[35] can be predictive of language deficits and this is important information to this study. Since the entire battery was not given so an overall score could be obtained, the results of this study must be interpreted with this in mind.

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[35]Ibid., pp. 377-378

CHAPTER III

ANALYSIS OF THE DATA

There were rifty-nine students tested for this study, but only fifty-two are included in the reporting of the findings. Some of those excluded were non-Indian or above age and one subject did not have a recorded birthdate.

The students have been arranged according to chronological age to the nearest full month. The comparison is made between the psycholinguistic age given for the raw score each student made and his chronological age. The psycholinguistic age stated for the raw score is the age of the norming population which made that score. Thus, a comparison of the Indian student's chronological age (CA) with the psycholinguistic (PLA) age appropiate to his score shows a comparison of individuals within the Sioux subgroup of our student population with the norming population used for the ITPA.

The solving of the numerical ratio of the PLA over the CA ($\frac{PLA}{CA}$) is shown for ease of comparison. Those ratios resolving with a whole number one (1.000) or more show that the student has a psycholinguistic age equal to or better than his chronological age. Another purpose for putting this ($\frac{PLA}{CA}$) ratio in numerial form was for ease of finding an average of the two tests in determining if the student's

psycholinguistic age (also known as language age) matched his chronological age from an average of both tests.

The tables accompanying this analysis are of two kinds. The first section (Tables I, II, III) shows the comparison of language age as described above and the second section (Tables IV, V, VI) shows a comparison of the standard scores made by each student according to the standard norms. This form of comparison is helpful in determining strengths and weaknesses of the student in the comparison of his own performance on the two tests as well as with standard norms.

In addition, using the standard scores and the standard error of measurement for each test for the appropriate age level, a more accurate picture of probable performance can be shown by establishing a range. As described in the examiner's manual, this range will be the limits of performance for two out of three times.[36]

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[36]McCarthy and Kirk, ITPA Examiner's Manual, Experimental Edition, p. 97.

TABLE I

FIVE AND SIX YEAR OLDS' COMPARISON CHART

OF CHRONOLOGICAL AGE WITH PSYCHOLINGUISTIC AGE

OF THE STANDARD NORMS

Sex	Subject	Chronological Age	A-V A Test L A	Comparison	A D Test L A	Comparison	Average Comparison
M	1	5^{6}	4^{2}	.760	4^{7}	.833	.796
F	2	5^{7}	4^{5}	.794	5^{11}	1.060	.927
F	3	5^{9}	4^{11}	.857	5^{11}	1.030	.943
M	4	5^{11}	5^{10}	.985	5^{2}	.872	.928
F	5	6^{0}	5^{10}	.975	4^{3}	.710	.842
F	6	6^{2}	7^{3}	1.176	7^{1}	1.150	1.168
F	7	6^{3}	4^{11}	.790	6^{9}	1.080	.935
F	8	6^{6}	7^{3}	1.115	5^{5}	.835	.975
F	9	6^{6}	5^{10}	.900	5^{2}	.795	.847
M	10	6^{7}	7^{8}	1.165	4^{7}	.695	.930
M	11	6^{7}	6^{10}	1.040	5^{0}	.760	.900
M	12	6^{8}	8^{3}	1.224	7^{6}	1.126	1.175
M	13	6^{8}	6^{10}	1.025	5^{11}	.886	.955
F	14	6^{9}	4^{11}	.729	6^{9}	1.000	.864
M	15	6^{9}	5^{10}	.864	4^{9}	.704	.784
F	16	6^{10}	4^{5}	.646	5^{0}	.734	.927
M	17	6^{10}	7^{8}	1.121	5^{0}	.734	.927
F	18	6^{10}	5^{3}	.767	6^{9}	.988	.877
F	19	6^{11}	6^{9}	.940	above norms	1.290	1.115

TABLE II

SEVEN YEAR OLDS' COMPARISON CHART OF CHRONOLOGICAL AGE WITH PSYCHOLINGUISTIC AGE OF THE STANDARD NORMS

Sex	Subject	Chronological Age	A-V A Test L A	Comparison	A D Test L A	Comparison	Average Comparison
M	20	7^{0}	6^{1}	.868	6^{9}	.965	.911
M	21	7^{1}	8^{3}	1.162	above norms	1.295	1.228
M	22	7^{2}	8^{3}	1.150	6^{5}	.896	1.023
M	23	7^{2}	7^{3}	1.011	5^{2}	.720	.865
M	24	7^{2}	9^{0}	1.257	above norms	1.325	1.296
F	25	7^{2}	8^{3}	1.150	8^{10}	1.234	1.192
F	26	7^{2}	6^{6}	.907	7^{6}	1.047	.977
M	27	7^{2}	7^{3}	1.015	6^{5}	.895	.955
F	28	7^{3}	7^{3}	1.000	above norms	1.240	1.120
F	29	7^{3}	6^{10}	.942	5^{0}	.690	.816
M	30	7^{3}	7^{3}	1.000	7^{6}	1.030	1.010
M	31	7^{4}	8^{3}	1.124	5^{11}	.808	.966
M	32	7^{5}	4^{11}	.664	4^{9}	.641	.752
M	33	7^{5}	6^{1}	.822	4^{9}	.641	.731
M	34	7^{5}	6^{1}	.822	7^{1}	.955	.888
F	35	7^{5}	above norms	1.300+	6^{9}	.910	1.105
F	36	7^{6}	8^{3}	1.100	6^{2}	.822	.961
F	37	7^{6}	6^{1}	.813	above norms	1.20+	1.051
M	38	7^{7}	6^{10}	.900	5^{2}	.628	.791
M	39	7^{10}	7^{3}	.928	above norms	1.200+	1.064+
M	40	7^{11}	9^{0}	1.138	7^{6}	.947	1.042

TABLE III

EIGHT YEAR OLDS' COMPARISON CHART

OF CHRONOLOGICAL AGE WITH PSYCHOLINGUISTIC AGE

OF THE STANDARD NORMS

Sex	Subject	Chronological Age	A-V A Test L A	Comparison	A D Test L A	Comparison	Average Comparison
M	41	8^{1}	5^{10}	.722	6^{5}	.795	.758
F	42	8^{1}	8^{3}	1.021	above norms	1.172+	1.096+
M	43	8^{2}	6^{10}	.837	7^{11}	.970	.903
M	44	8^{2}	above norms	1.150	7^{6}	.920	1.035
F	45	8^{3}	7^{8}	.930	7^{1}	.860	.895
F	46	8^{5}	8^{3}	.980	7^{1}	.840	.910
F	47	8^{6}	8^{3}	.972	above norms	1.180+	1.076+
M	48	8^{7}	8^{3}	.960	above norms	1.169	1.064
F	49	8^{7}	8^{3}	.960	5^{5}	.631	.795
F	50	8^{8}	9^{0}	1.030	4^{9}	.548	.789
F	51	8^{8}	6^{10}	.789	7^{11}	.914	.851
M	52	8^{8}	8^{3}	.953	7^{6}	.865	.909

COMPARISONS MADE OF LANGUAGE AGE

Auditory-Vocal Association Test

Twenty-two students made scores showing language ages equivalent to or more than their respective chronological ages. Of these students, twelve had a language age of one year or more difference above the chronological age.

Thirty students did not make scores giving a language age equal to their chronological age. Twelve of these students missed by more than a full year. The percentage breakdown of students in each category is listed in the following chart form.

Category	Number of students	Per cent of group
Made language age of norms by more than one year	12	23.1
Made language age of norms up to one year better	10	19.2
Made standard language age	22	42.3
Missed language age of norms less than one year	18	34.6
Missed language age of norms by more than one year	12	23.1
Missed standard language age	30	57.7

Auditory Decoding Test

Eighteen students scored high enough to have a language age equivalent to or better than their chronological

age. Ten of this group had a language age one year or more higher than the standard norms for their age.

Thirty-four students did not make scores to show the language age expected by the norms, with twenty of these missing the standards by a full year or more. The percentage chart for this test follows.

Category	Number of students	Per cent of group
Made language age of norms by more than one year	10	19.2
Made language age of norms up to one year better	8	15.4
Made standard language age	18	34.6
Missed language age of norms by less than one year	14	26.9
Missed language age of norms by more than one year	20	38.5
Missed standard language age	34	65.4

Both Tests

Only eight students made scores showing language ages equal to or higher than their chronological ages on both tests. Two of these eight students scored the highest on the Auditory-Vocal Association Test, and six scored the highest on the Auditory Decoding Test.

More students (twenty-eight to twenty-four) did better on the Auditory-Vocal Association Test than the Auditory Decoding with the extremes of scores appearing on

the latter test. The students who did well on both tests scored highest on the Auditory Decoding Test. The majority of students who did not achieve the language age of the norms for the Auditory Decoding Test missed them by more than one year.

In averaging the results of both tests, it was found that seventeen students made a language age equivalent to or better than the standard norms. Eleven of these students scored highest on the Auditory-Decoding Test and six did best on the Auditory-Vocal Association Test.

TABLE IV

THE RANGES OF PERFORMANCES FOR THE FIVE AND SIX YEAR OLDS ESTABLISHED ACCORDING TO THE STANDARD SCORES OF THE NORMS OF THE ITPA

Subject	Standard Score A-V A	Standard Measurement of Error* A-V A	Range	Standard Score A D	Standard Measurement of Error* A D	Range
1	-1.64	.64	-2.28 to -1.00	- .74	.30	-1.04 to - .44
2	-1.35	.64	-1.99 to - .71	.27	.30	- .03 to .57
3	-1.30	.52	-1.82 to - .88	- .11	.39	- .50 to .28
4	- .36	.52	- .88 to .16	- .73	.39	-1.12 to - .34
5	- .36	.52	- .88 to .16	-1.75	.39	-2.24 to -1.36
6	.91	.52	.39 to 1.43	.70	.39	.41 to 1.09
7	-2.23	.54	-2.77 to 1.69	.11	.45	- .34 to .56
8	.69	.54	.15 to 1.23	-1.03	.45	-1.48 to - .58
9	- .98	.54	-1.52 to - .44	-1.26	.45	-1.71 to - .81
10	1.11	.54	.57 to 1.65	-1.94	.45	-2.39 to -1.49
11	.27	.54	- .27 to .81	-1.49	.45	-1.94 to -1.04
12	1.52	.54	.98 to 2.06	.56	.45	.11 to 1.01

*The usual ± signs preceding each standard error have been omitted from this table for the sake of clarity. All entries are to be read as though preceded by such a sign.

TABLE IV (Continued)

Standard Scores of the Norms of the ITPA

Subject	Standard Score A-V A	Standard Measurement of Error* A-V A	Range	Standard Score A D	Standard Measurement of Error* A D	Range
13	.27	.54	- .27 to .81	- .58	.45	-1.03 to - .13
14	-1.57	.51	-2.08 to -1.06	.05	.49	- .44 to .54
15	- .69	.51	-1.10 to - .18	-1.81	.49	-2.30 to -1.32
16	-2.16	.51	-2.67 to -1.65	-1.58	.49	-2.07 to 1.09
17	.79	.51	.28 to 1.30	-1.58	.49	-2.07 to -1.09
18	-1.28	.51	-1.78 to - .77	.05	.49	- .44 to .54
19	- .09	.51	- .60 to .42	1.21	.49	.72 to 1.70

*The usual ± signs preceding each standard error have been omitted from this table for the sake of clarity. All entries are to be read as though preceded by such a sign.

TABLE V

THE RANGES OF PERFORMANCE FOR THE SEVEN YEAR OLDS ESTABLISHED ACCORDING TO THE STANDARD SCORES OF THE NORMS OF THE ITPA

Subject	Standard Score A-V A	Standard Measurement of Error* A-V A	Range	Standard Score A D	Standard Measurement of Error* A D	Range
20	- .39	.51	- .90 to .12	.05	.49	- .44 to .54
21	1.09	.51	.58 to 1.60	1.21	.49	.72 to 1.70
22	1.09	.51	.58 to 1.60	- .18	.49	- .67 to .31
23	.50	.51	- .01 to 1.01	-1.35	.49	-1.84 to - .86
24	1.38	.51	.87 to 1.89	1.68	.49	1.19 to 2.17
25	1.09	.51	.58 to 1.60	.98	.49	.49 to 1.47
26	- .09	.51	- .60 to .42	.51	.49	.02 to 1.00
27	.50	.51	- .01 to 1.01	- .18	.49	- .67 to .31
28	- .43	.70	-1.13 to .27	.80	.50	.30 to 1.30
29	- .87	.70	-1.57 to - .17	-2.31	.50	-2.81 to -1.81
30	- .43	.70	-1.13 to .27	.02	.50	- .48 to .52
31	.47	.70	- .23 to 1.17	-1.27	.50	-1.77 to - .77
32	-3.00	.70	- 3.70 to -2.30	-2.57	.50	-3.07 to -2.07

*The usual ± signs preceding each standard error have been omitted from this table for the sake of clarity. All entries are to be read as though preceded by such a sign.

TABLE V (Continued)

Standard Scores of the Norms of the ITPA

Subject	Standard Score A-V A	Standard Measurement of Error* A-V A	Range	Standard Score A D	Standard Measurement of Error* A D	Range
33	-1.76	.70	-2.46 to -1.06	-2.57	.50	-3.07 to -2.07
34	-1.32	.70	-2.02 to - .62	- .24	.50	- .74 to .26
35	1.36	.70	-0.66 to 2.06	- .50	.50	-1.00 to 0.00
36	.47	.70	- .23 to 1.17	1.58	.50	1.08 to 2.08
37	1.76	.70	-2.46 to -1.06	.80	.50	.30 to 1.30
38	- .87	.70	-1.57 to - .17	-2.50	.50	-2.55 to -1.55
39	- .43	.70	-1.13 to .27	1.32	.50	.82 to 1.82
40	.91	.70	.21 to 1.61	.02	.50	- .48 to .52

*The usual ± signs preceding each standard error have been omitted from this table for the sake of clarity. All entries are to be read as though preceded by such a sign.

TABLE VI

THE RANGES OF PERFORMANCE FOR THE EIGHT YEAR OLDS ESTABLISHED ACCORDING TO THE STANDARD SCORES OF THE NORMS OF THE ITPA

Subject	Standard Score A-V A	Standard Measurement of Error* A-V A	Range	Standard Score A D	Standard Measurement of Error* A D	Range
41	-2.21	.70	-2.91 to -1.51	- .75	.50	-1.25 to - .25
42	.47	.70	- .23 to 1.17	1.06	.50	0.56 to 1.56
43	- .87	.70	-1.57 to - .17	.28	.50	- .22 to .78
44	1.36	.70	.66 to 2.06	.02	.50	- .48 to .52
45	- .43	.65	-1.08 to .22	- .46	.55	-1.01 to .09
46	- .02	.65	- .67 to .63	- .46	.55	-1.01 to .09
47	- .02	.65	- .67 to .63	.86	.55	.31 to 1.41
48	- .02	.65	- .67 to .63	1.30	.55	.75 to 1.85
49	- .02	.65	- .67 to .63	-1.77	.55	-2.32 to -1.22
50	-1.25	.65	-1.90 to - .60	- .02	.55	- .57 to .53

*The usual ± signs preceding each standard error have been omitted from this table for the sake of clarity. All entries are to be read as though preceded by such a sign.

COMPARISONS MADE OF STANDARD SCORES

The purpose of including a comparison of standard scores in addition to language age comparisons is two-fold. One, it is to facilitate the comparison of the student's performance on the two tests to show strengths and weaknesses; and two, it provides a more accurate picture of the student's performance by giving consideration to the standard error of measurement in defining the probable limits of performance, termed the range.

There are some changes in the statistics as reported under the language age section due to the fact that the authors of the test used different criteria for establishing the language age norms and the standard score norms. Only twenty students made the language age on the norms or better on the Auditory-Vocal Association Test with the standard scores compared to twenty-two with the language age norms.

Twenty-three students made the norms on the Auditory Decoding Test on standard scores whereas only eighteen made the language age norms for the same test. These comparisons can be drawn from the column on the tables under the standard scores for each test.

For comparing strengths and weaknesses of the students on the two tests, the manual suggests that there must be at least a whole number one (1.00) difference of standard scores. The students tested showed almost even distribution of strengths and weaknesses, with sixteen showing strength in

favor of the Auditory-Vocal Association Test and fifteen displaying strength favoring the Auditory Decoding Test.

When the standard error of measurement is considered for each student, a high range and low range of performance may be established. Letting 0.00 represent the mean language age for a particular chronological age level, four groups of students can be compared. There are those showing a strength of 1.00 above the mean, those showing a weakness of -1.00 below the mean, and the two groups on either side of the mean within a 1.00 deviation. The following chart summarizes the performance of the group on each test if each student would perform at the extremes of his range.

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HIGH RANGE OF STANDARD SCORES

ON AUDITORY DECODING TEST

	-1.00		0.00		+1.00
Number of students	12	08	18	14	
Percent of group	23.1	15.4	34.6	26.9	
Language age norms	38.5 below		61.5 above		

LOW RANGE OF STANDARD SCORES

ON AUDITORY DECODING TEST

	-1.00		0.00		+1.00
Number of students	21	17	12	2	
Percent of group	40.4	32.7	23.1	3.8	
Language age norms	73.1 below		26.9 above		

HIGH RANGE OF STANDARD SCORES

ON AUDITORY-VOCAL ASSOCIATION TESTS

	-1.00		0.00	+1.00
Number of students	7	11	17	17
Percent of group	13.43	21.15	32.7	32.7
Language age norms	34.6 below		65.4 above	

LOW RANGE OF STANDARD SCORES

ON AUDITORY-VOCAL ASSOCIATION TEST

	-1.00		0.00	+1.00
Number of students	21	17	12	2
Percent of group	40.4	32.7	23.1	3.8
Language age norms	73.1 below		26.9 above	

OTHER COMPARISON NOTES

Twenty-six boys and twenty-six girls composed the total group tested for this study. The boys did better on the Auditory-Vocal Association Test than they did on the Auditory Decoding Test. The girls had a reverse performance as shown on the following chart.

Test	Category	Boys	Girls
Auditory-Vocal Association Test	Made language age of norms	13	9
	Missed language age of norms	13	17
Auditory Decoding Test	Made language age of norms	6	12
	Missed language age of norms	20	14

On the average of the two tests, nine boys made their language age and eight girls made them. There were four boys and four girls who made the standards or better on each of the two tests.

Looking at age divisions to see what age groups had the better performance, one can see performance ranging from low to high in nearly all age groups. The early seven year olds had the highest range of performance as a group with most of them making the norms on one or the other test and several scoring high on both tests.

Poor performances are scattered throughout all ages as were the extremely high performances. These scattered results tend to indicate a random sampling of Indian students which was desirable for this study.

CHAPTER IV

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The findings of this study seem to indicate that the overall performance of this Indian group would miss the norming population by only eleven or twelve percent. There is indication that many Indian students are top performers in terms of knowing vocabulary and associative meanings of words. Their lower scoring associates are more numerous in their groups than was true in the norming population.

The extremes of performance were made on the Auditory Decoding Test. Those Indian students who performed well on both tests did best on this one, but those who did poorly did the worst on this test. In wondering about the element of guessing as influencing the outcome of this test, this examiner has concluded that few scores were benefited by a "lucky" answering of "Yes" or "No" to the questions.

More consistent and more favorable performance was given by the group to the Auditory-Vocal Association Test. As mentioned in the review of leterature, this test appears quite valid as a general test of intellectual and linguistic ability, especially of linguistic ability. This being possible, these findings would indicate that the Indian students have comparable linguistic ability as the norming population, but are lacking a comparable vocabulary.

Since a number of students scored well on each test and many more scored well on one or the other test, there doesn't appear to be a cultural difference that has been exposed by this study. There were no strange or unique answers or lack of answers on the Auditory-Vocal Association Test to indicate a cultural ignorance. The ITPA seems to have cross cultural validity with the Sioux Indian students.

Dogmatic conclusions should not be drawn from a study limited in the number of subtests given and the number of students tested. There is an indication that strengths and weaknesses can be discovered using just two subtests, but it would be desirable to have the complete battery given.

It appears the ITPA can be a valid diagnostic instrument for use with Sioux Indian students, if it is understood that the scores may be skewed slightly toward the low end of achievement. The ITPA should not be used in isolation, but in correlation with other measuring instruments.

From review of this study, the following recommendations are suggested.

1. Further studies using the entire ITPA with Indian students is warranted and necessary for more accurate comparisons with the norming population.

2. The ITPA should be used for diagnosis of psycholinguistic abilities with Indian students. The

interpretation of results should be made with awareness as to what groups the individual is being compared, his own peer group of Indian students or the norming population.

3. The best use of the ITPA would be for determining strengths and weaknesses of the individual within the battery of tests. There would not be much gain in drawing strict comparisons with white middle-class students.

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